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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,060	06/08/2006	Imants Deme	TS9512 US	1596
23632	7590	02/26/2009		
SHELL OIL COMPANY P O BOX 2463 HOUSTON, TX 772522463			EXAMINER	
			PARVINI, PEGAH	
			ART UNIT	PAPER NUMBER
			1793	
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			02/26/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/582,060

Applicant(s)

DEME, IMANTS

Examiner

PEGAH PARVINI

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 February 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 10-14, 16-18, 20-24, 30, 32-36 and 38-45 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 10-14, 16-18, 20-24, 30, 32-36, and 38-45 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 2/12/2009
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on February 12, 2009 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-14, 16-18, and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over AU 9715194 in view of US Patent No. 4,756,763 to Etnyre in view of US Patent No. 3,960,585 to Gaw.

Regarding claims 10-11, 16, and 36, AU 9715194 disclose that in the production of paving material, sand and gravel are heated at a temperature of 170°C to 375°C,

then the bituminous material is heated to at least 170°C and finally the two are mixed (Abstract).

The reference does not, expressly, disclose the use of sulfur and hydrogen sulfide suppressant or its content and is silent to the amount of sulfur used.

Etnyre discloses the use of sulfur in the asphalt because it strengthens the ultimate paving composition and raises the flow point of the composition (column 2, lines 5-25; column 5, lines 65-68; column 6, lines 1-5). Etnyre does not expressly disclose the use of hydrogen sulfide suppressant. Etnyre teaches the use of calcium-based mineral filler such as calcium hydroxide to the mixture as well (column 6, lines 42-55).

Gaw teaches the use of hydrogen sulfide suppressant selected from the class consisting of free radical inhibitors, redox catalysts, iron chlorides and mixtures thereof in preparing a sulfur-asphalt composition (column 1, lines 55-57). It, further, discloses the iodine, copper salts, copper oxides, iron salts, iron oxides, and cobalt salts and cobalt oxides as some of the conventional redox reagents used as catalysts (column 2, lines 13-17). Gaw, also, teaches that regarding hydrogen sulfide suppressant, sufficient amount is needed which would be effective to substantially suppress hydrogen sulfide evolution from the composition at temperatures up to 175°C and preferably below 150°C (column 1, lines 58-64; column 2, lines 54-60). In addition, Gaw discloses that the particular amount of hydrogen sulfide suppressant is added to the composition to give the desired effects at high temperatures and will vary with the specific sulfur-asphalt employed (column 2, lines 32-39). Furthermore, Gaw teaches that the quantity of

suppressant will be only a minor proportion of the total sulfur-asphalt composition with amount as low as 0.05% by weight and not exceeding 0.5% by weight; however, Gaw teaches that the use of larger amount is by no means excluded (column 2, lines 40-50).

Therefore, it would have been obvious to one ordinary skill in the art to combine the three references in order to obtain the limitations of said claims motivated by the fact that Etnyre discloses that the use of sulfur in the asphalt composition strengthens the paving composition and raises the flow point of the composition; furthermore, Gaw teaches that because of environmental considerations, it is desirable to reduce the hydrogen sulfide concentrations by use of a hydrogen sulfide suppressant. Additionally, regarding the amount of H₂S-suppressant, Gaw teaches that the amount used should be enough to provide a desired inhibiting effect at high temperatures and that it will only be a minor proportion.

It is noted that the sulfur pellets, as claimed, may be added in any one of steps (i) to (iii). It is, further, noted that said claims recite the language of "comprising". Also, claim 10 recites the language of "consisting essentially of"; Gaw teaches the use of only 6% by weight of asphalt (column 4, lines 37-47). The term "consisting essentially of" may include any unrecited ingredient which does not affect the basic and novel characteristics of the invention. *In re Garnero*, 162 U.S.P.Q. 22 (CCPA 1969); *In re Delajarte*, 143 U.S.P.Q. 256 (CCPA 1964); *In re Janakirama-Rao*, 137 U.S.P.Q. 893 (CCPA 1963); *Ex parte Davis*, 80 U.S.P.Q. 448 (PO BdPatApp 1949).

It should be noted that Gaw teaches that the temperature reaches up to 175°C and is preferred to raise it up to 150°C (column 1, lines 62-63; column 2, lines 54-60).

Thus, it would have been obvious to have used any appropriate temperature below this limit.

Regarding claims 12-13, and 17-18, Gaw teaches iron salts, cobalt oxides, and many more as some of the conventional redox reagents; the reference further discloses that iron chlorides are amongst the most preferred ones such as ferric chloride (column 1, lines 55-57; column 2, lines 6-10, 14-17, and 19-28).

Regarding claim 14, Etnyre teaches the use of calcium-based mineral filler such as calcium hydroxide in an amount of 25% by weight of the mixture; however, the reference, further, asserts that the quantity of mineral filler may be varied depending upon the grade of asphalt, the ration of sulfur to the asphalt and the maximum temperature which the pellets must withstand without significant deformation (column 5, lines 57-61; column 6, lines 42-55).

Claims 20-24, 30, 32 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaw in view of Etnyre.

Regarding claims 20-24, 30 and 35, Gaw teaches the use of hydrogen sulfide suppressant, in any suitable amount to give desired effects at high temperature, along with sulfur in a sulfur-asphalt composition; the reference, further, discloses the use of

iron chloride such as ferric chloride, or cobalt salts or some other compounds as H₂S-suppressant (columns 1 and 2). The reference does not expressly disclose the use of filler; nevertheless, the use of filler is optional based on the recitation of the claims.

Etnyre teaches the use of calcium-based mineral filler such as calcium hydroxide in any appropriate amount which depends on the grade of the asphalt, the ratio of the sulfur to the asphalt used, and the maximum temperature which the sulfur-asphalt pellets must withstand without significant deformation; Etnyre, also, discloses an amount of 26% by weight of the mineral filler (column 5, lines 56-62; column 6, lines 42-55). The reference, in addition, discloses forming the sulfur-asphalt-filler mixture into pellets to easily handle them (column 1, lines 11-18; column 2, lines 10-12, 24-26).

Therefore, it would have been obvious to one of ordinary skill in the art to combine Gaw and Etnyre and to use a calcium-based mineral filler such as calcium hydroxide as that taught by Etnyre in the invention of Gaw motivated by the fact that the filler prevents the asphalts from stripping away in the presence of water when the pellets are subsequently heated and mixed with aggregate. Gaw and Etnyre are both from the same field of art. Furthermore, it is, again, noted that the use of filler is recited as being optional in the independent claim 20.

Additionally, it would have been obvious to a person of ordinary skill in the art to modify Etnyre in order to include the hydrogen sulfide suppressant as that taught by Gaw motivated by the fact that because of environmental considerations, it is desirable to reduce the amount of H₂S which is produced as a result of the addition of sulfur to the asphalt composition. It should be noted that the addition of sulfur to asphalt improves

the strength and other properties of the pavement mixture disclosed by Etnyre and raises the flow point to a temperature well above the temperature at which the raw asphalt will flow and conglomerate (column 3, lines 29-38).

Considering the fact that the suppressant, suppress the formation of hydrogen sulfide (Gaw, column 2), it would have been obvious to add suppressant to sulfur, and since the formation of pellets assists in handling, it would have been obvious, as detailed out above, to make pellets comprising sulfur, suppressant, and possibly fillers. In addition, considering the fact that any mixing has to be done in a container, thus, the existence and use of a mixing unit or container is obvious and is within the scope of the skilled artisan absence clear evidence showing the contrary.

With reference to the recitation of "consisting essentially of", it is noted that the amount of asphalt is only a small portion (Gaw; column 4, lines 37-46). The term "consisting essentially of", as noted below in the Arguments section, may include any unrecited ingredients which do no affect the basic and novel characteristics of the invention. *In re Gernero*, 162 U.S.P.Q. 221 (CCPA 1969); *In re Lajarte*, 143 U.S.P.Q. 256 (CCPA 1964); *In re Janakirama-Rao*, 137 U.S.P.Q. 893 (CCPA 1963); *Ex parte Davis*, 80 U.S.P.Q. 448 (PO BdPatApp 1949).

It should be noted that Gaw teaches that the temperature reaches up to 175°C and is preferred to raise it up to 150°C (column 1, lines 62-63; column 2, lines 54-60). Thus, it would have been obvious to have used any appropriate temperature below this limit.

Regarding claim 32, it is noted that while Gaw teaches the use of hydrated ferric chloride; thus, the existence of water is apparent, and therefore, the limitation of claim 32 in the combination of Gaw and Etnyre is obvious absence clear evidence showing the contrary because the changing of sequence of adding ingredients does not represent a patentable distinction..

Claim 33 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gaw in view of Etnyre as applied to claim 32 above, and further, in view of U.S. Patent No. 6,133,351 to Hayner.

The combination of Gaw in view of Etnyre, as detailed out above, teach making sulfur pellets while the existence of hydrogen sulfide is obvious as detailed above and while water or an aqueous environment may be present.

Nevertheless, the references do not expressly disclose any particle size for the sulfur. However, as Hayner discloses, there is nothing novel about adding finely ground sulfur to asphalt, and this has been practices for decades (column 7, line 65 to column 8, lines 28-32). It is the examiners position that "finely ground" clearly reads on micron sized particles absent evidence to the contrary. Even though Hayner may not disclose the formation of aqueous slurry of sulfur, the fact that said reference clearly and generally discloses that it's known to add fine sulfur particles to asphalt is seen to read on the limitation of instant claim. With reference to the disclosure of the adding sulfur to asphalt, it is noted that the recitation of instant claim 30 utilizes the phrase "consisting essentially of" and regarding this phrase MPEP § 2111.03 states:

"For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising".

Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gaw in view of Etnyre and Hayner as applied to claim 33 above, and further, in view of U.S. Patent No. 6,706,787 to Burris et al.

The combination of Gaw in view of Etnyre and further in view of Hayner as detailed out above, teach making sulfur pellets while the existence of hydrogen sulfide is obvious as detailed above while sulfur may be added in finely ground size and while an aqueous environment may be present.

With reference to the addition of an emulsifier, it is noted that based on the disclosure of Burris et al., the existence of emulsifier in aqueous asphalt emulsion comprising sulfur is known as said reference, when talking about the use of rheological agents, disclose that the use of rheological agents is limited depending on the emulsifiers present in the emulsion of asphalt-sulfur emulsion (column 3, line 65 to column 4, line 1; column 4, line 40 to column 5, line 6). Thus, it would have been obvious to utilize an emulsifier in an aqueous composition comprising sulfur and asphalt as detailed above.

Claims 38-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Etnyre in view of Gaw as evidenced by U.S. Patent No. 3,738,853 to Kopvillem et al.

Regarding claims 38-45, Etnyre teaches a composition of sulfur and asphalt which is formed into pellets to easily handle them (column 2, lines 6-26). Certain other components may be added to this mixture. Etnyre, further, discloses that the ratio of sulfur to asphalt may be 4:1 (column 4, lines 1-6). Considering the fact that the references discloses that fillers may be added to the mixture and even if added, their amounts may be varied, taking an amount of, for example, 3wt% of filler, and a ratio of 4:1, an amount of 77.6wt% of sulfur is achieved.

It is to be noted that the disclosure of Etnyre in column 4, lines 5-6 is interpreted as a preferred ratio of sulfur to asphalt; in other words, it does not teach away from the invention. Specially, it is noted that as disclosed by Etnyre, the addition of sulfur to bituminous concrete produces certain advantages such as substantial strength improvements as that shown by Kopvillem et al. In other words, Kopvillem et al. teach that high concentration of sulfur-asphalt ratio substantially improves the strength (Kopvillem et al., column 1, lines 32-36 and 55-60). Therefore, it would have been obvious to utilize a higher ratio of sulfur to asphalt compared to the 4:1 ratio motivated by the fact that higher amounts of sulfur improves the strength. It is to be noted that although the references, alone, do not disclose a pellet comprising of H₂S-suppressant and sulfur, (1) instant claim 38 recites the limitation of "comprising", (2) the rejection of instant claims and the dependent ones are not based on anticipatory rejection or 102, (3) the claimed pellets are used in the field of art which is covered by the prior art of record; thus, the teaching of the prior art on using higher amount of sulfur is taken to

make the combination of references to obtain higher amount of sulfur in the pellets of Etnyre obvious. Thus, based on the above, if, for example, a ratio of 13:1 of sulfur to asphalt with the optional 3wt% of filler is taken, this would result in an amount of 90wt% of sulfur. The reference does not, expressly, disclose the use of H₂S-suppressant with this mixing composition.

Gaw, drawn to the same field of art, discloses the use of hydrogen sulfide suppressant to reduce the evolution of hydrogen sulfide which is toxic (column 1, lines 40-50). Gaw expressly teaches that the amount of the suppressant does not exceed 0.5% by weight of the total composition (column 2, lines 44-48). As disclosed by Gaw, a hydrogen sulfide suppressant is selected from the class consisting of free radical inhibitors, redox catalysts, iron chloride such as ferric chloride and mixture thereof wherein attention is drawn to tetra-alkyl-thiuram disulfide, zinc dialkyl dithiocarbamates and diphenyl guanidine as some free radical inhibitors and iodine, copper salts and copper oxides, iron salts (such as iron chlorides, i.e. ferric chloride and ferrous chloride as being most effective and practical) and iron oxides, cobalt salts and cobalt oxides as some conventional redox reagents (column 1, lines 55-57; column 2, lines 6-10 and 14-30).

Therefore, it would have been obvious to one of ordinary skill in the art to modify Etnyre in order to include the use of a hydrogen sulfide suppressant as that taught by Gaw motivated by the fact that Gaw expressly discloses that H₂S-suppressants reduce the evolution of hydrogen sulfide gas. Moreover, this combination is motivated by the

fact that Etnyre discloses that the composition is formed into pellets to easily handle the composition (column 2, lines 10-12).

Response to Amendment

Applicant's amendments to claims 16-18, 32, and 37-39, filed February 12, 2009 are acknowledged. However, they do not place the application in condition for allowance.

Applicant's amendment to claim 36, filed February 12, 2009 is acknowledged. Although this does not place the application in condition for allowance, the rejection under 112-second paragraph of said claim is hereby withdrawn.

Furthermore, as a result of cancellation of claim 31, the objection made to Specification detailed out in the previous Office action is hereby withdrawn.

Additionally, as a result of the cancellation of claims 1-5, the rejection under 112-second paragraph of said claims is withdrawn.

Response to Arguments

Applicant's arguments filed February 12, 2009 have been fully considered but they are not persuasive.

Applicant has argued that the cited prior art references fail to disclose a high sulfur content composition that also contains a significant concentration of hydrogen

sulfide suppressant, and that there is no teaching of adding pellets of sulfur and hydrogen sulfide to an asphalt composition.

The Examiner, respectfully, submits that as detailed above in the rejection and evidenced from the cited references, hydrogen suppressant has been known to be used where sulfur is used to suppress the effect of hydrogen sulfide; also, it has been taught in the prior art to form pellets of sulfur composition for easy handling. As combined above in the detailed rejection, it is obvious to one of ordinary skill in the art to add hydrogen sulfide to said pellets to suppress the evolution of hydrogen sulfide. With reference to the existence of asphalt, it is noted that while the instant claims recite the limitation of "consisting essentially of", and "without the substantial addition of bitumen or aggregate or both" while "substantial" has not been defined to be how much, the combination of references as detailed above are taken to read on the limitations of instant claims. In addition, Etnyre is drawn to a sulfur asphalt mixture to which filler may or may not be added (column 5, lines 39-41; 57-59). It is, further, noted that aggregate may be added to the mixture (Etnyre, column 6, lines 42-44).

It is noted that in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant has argued that the language of "consisting essentially of" in claim 20 and 38 excludes the substantial presence of bitumen or aggregate or both.

The Examiner, respectfully, submits that regarding the phrase "consisting essentially of", MPEP § 2111.03 states:

"The transitional phrase "consisting essentially of" limits the scope of a claim to the specified materials or steps "and those that do not materially affect the basic and novel characteristic(s)" of the claimed invention. In re Herz."

Furthermore, MPEP § 2111.03 states:

"For the purposes of searching for and applying prior art under 35 U.S.C. 102 and 103, absent a clear indication in the specification or claims of what the basic and novel characteristics actually are, "consisting essentially of" will be construed as equivalent to "comprising"."

Additionally:

"If an applicant contends that additional steps or materials in the prior art are excluded by the recitation of "consisting essentially of," applicant has the burden of showing that the introduction of additional steps or components would materially change the characteristics of applicant's invention. In re De Lajarte."

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent No. 4,769,288 to Saylak.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PEGAH PARVINI whose telephone number is (571)272-2639. The examiner can normally be reached on Monday to Friday 8:00am-4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Pegah Parvini/
Examiner, Art Unit 1793

/Michael A Marcheschi/
Primary Examiner, Art Unit 1793